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Case report

CASE REPORT

Lung mass and tularaemia

D. Franzen[1], F. Müller[2] and P.K. Bode[3]

From the [1]Division of Pulmonology University Hospital Zurich, Raemistrasse 100, Zurich 8091, Switzerland, [2]Institute of Medical Microbiology, University of Zurich, Zurich 8006, Switzerland and [3]Institute of Surgical Pathology, University Hospital Zurich, Raemistrasse 100, Zurich 8091, Switzerland

Address correspondence to Dr D. Franzen, Department of Pulmonology, University Hospital Zurich, Raemistrasse 100, 8091 Zurich, Switzerland.
email: daniel.franzen@usz.ch

Learning point for clinicians

Radiological signs of pulmonary tularaemia can be indistinguishable from lung cancer, and putatively characteristic CT or even PET/CT images can easily mislead to premature diagnosis of malignancy. Therefore, tularaemia should be considered when unspecific symptoms of pneumonia are present, and the patient has an occupation or hobby at risk.

Case report

A 41-year-old IT specialist was referred with suspected metastatic lung cancer upon an ^{18}F-fluorodeoxyglucose (^{18}F-FDG) positron emission tomography/computed tomography (PET/CT) revealing a high tracer uptake in the enlarged hilar lymph nodes of the right lung, and in several mediastinal and periportal lymph nodes (Figure 1). Two weeks earlier he had consulted his GP with sudden onset of malaise, growing pains, low-grade fever, headache with scintillating scotoma, sore throat and an itching exanthema of the upper part of his body. His otherwise medical history was uneventful including absence of previous illnesses, no medication and no recent travel abroad. He denied cigarette smoking, alcohol or illicit drug abuse. Physical examination was unremarkable aside from a body temperature of 37.6°C and decreased oxygen saturation of 94% on ambient air. Lung auscultation and palpation of the lymph nodes were normal. Laboratory studies revealed mild leucocytosis (leucocytes 11.3 $\times$ 10^3/µl) with 80% neutrophiles and mildly elevated C-reactive protein (25 mg/l). As an enlarged right-sided hilar region had been visible on chest X-ray, a CT scan had been added, revealing unilateral mediastinal and hilar lymphadenopathy, and an upper lobe consolidation. After conventional bronchoscopy including transbronchial needle aspiration (TBNA) and transbronchial forceps biopsy had failed to deliver the proof of malignancy, an ^{18}F-FDG-PET/CT and referral for endobronchial ultrasound (EBUS)-guided TBNA were initiated. Cytological examination of EBUS-TBNA smears taken from the lymph nodes 4R, 10R and 11R showed morphologically normal lymphocytes beside detritus, neutrophils and granuloma-like aggregates of epithelioid macrophages with no evidence of malignancy. After interdisciplinary discussion between staff of the departments of pathology and pulmonology the question of the patient's leisure activities came up. As the patient was a dedicated hunter, polymerase chain reaction (PCR) for *Francisella tularensis* on the cell block material was ordered and orally ciprofloxacin 500 mg bid was begun empirically. Diagnosis of glandular and presumably pneumonic tularaemia was confirmed after PCR detection and positive serologic testing (marked positive IgG and IgM) for *F. tularensis*. Culture plates grew only throat bacteria. Two weeks later, the patient fully recovered, and the lesions disappeared completely in a follow-up CT scan.

Discussion

Tularaemia is a rare zoonotic infection caused by *F. tularensis*, a Gram-negative bacterium which is typically acquired after contact with contaminated animals by air- or tick-borne spread. After an average incubation period of 3–5 days the disease has an abrupt onset of non-specific symptoms including fever, chills, malaise, headache, fatigue and growing pains. Additional symptoms depend on the site of infection classifying tularaemia into ulcero-glandular, glandular, oculo-glandular, oropharyngeal, typhoidal or pneumonic forms.[1] Our patient presented with unspecific symptoms along with unilateral hilar enlargement and a pneumonic infiltrate. Due to high metabolic activity of several mediastinal, hilar and abdominal lymph nodes detected in the ^{18}F-FDG-PET/CT suspicion of metastatic lung cancer had arisen. However, according to a recently

Figure 1. PET/CT scan. Maximum intensity projection 60 min after injection of 352 MBq ^{18}F-FDG, showing metabolically active right-sided hilar lymph nodes.

published case series, PET/CT scans of pulmonary tularaemia can be indistinguishable from lung cancer, and putatively characteristic CT or even PET/CT images can easily mislead to premature diagnosis of malignancy.[2] In the present case, the hint to diagnosis was given after interdisciplinary discussion and thorough patient history highlighting these issues in the diagnostic work-up of a patient presenting with hilar lymphadenopathy of unknown cause. Tularaemia should be considered when unspecific symptoms and/or clinical signs of pneumonia are present, and the patient has an occupation or hobby at risk including farming, landscaping and hunting.[3,4] *Francisellatularensis* can be rapidly detected by PCR with favourable sensitivity and specificity on different biopsy materials,[5] i.e. EBUS-guided fine needle aspirates posing an elegant and non-invasive technique with a low procedure related morbidity.

Conflict of interest: None declared.

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